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ABSTRACT

The present study explored the effects of complex relational sentences upon the acquisition and recall of surrounding material in immediate and long-term memory. The study also investigated the effects of an immediate prompted recall test upon long-term retention, and the recallability of different types of content. Reading time (subject-paced; 16 second; 10 second) was combined factorially with presence and absence of an immediate prompted recall test. The subjects were 72 undergraduates randomly assigned with 12 subjects in each of six groups. Each subject had three acquisition trials, a free recall test, and four long-term retention tests. Half of the subjects also had an immediate prompted recall test on text material after the third acquisition trial. The results were subjected to factor analysis. The results showed that complex relational sentences did not inhibit recall of material following or preceding it in the text on either acquisition or long-term recall. (Author/DB)

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Acquisition and Long-Term Recall of Text Surrounding Complex Relational Sentences

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Objectives

Several studies (Savin & Perchonock, 1965; Foss & Cairns, 1971) suggest that complex sentences may inhibit the recall or acquisition of subsequent verbal materials. There is a suggestion that such effects can occur with text materials (Rothkopf, 1969; Frase, 1971). The present study explored the effects of complex relational sentences upon the acquisition and recall of surrounding material in immediate and long-term memory. This study also investigated the effects of an immediate prompted recall test upon long-term retention, and the recallability of different types of content (which were designed to produce differences in the recall of other materials).

Method

Materials.--The text, the same as that used by Frase (1972), described a fictional country and consisted of three paragraphs of nine lines each. The middle three sentences of each paragraph were the critical sentences designed to elicit different processing activities and these took three forms: 1) factual sentences; 2) inclusion sentences; and 3) temporal sentences. The first and last part of each paragraph contained three facts which were tested in recall. The text was presented on slides, three lines at a time. The prompted recall test on text material, used by Frase, consisted of short answer completion items covering each of the 18 facts in the text. Two prompted recall tests on the critical sentences were also included: 1) general cues, in which the general topic for each of the three sets of critical sentences was presented and Ss wrote what they could remember; and 2) specific cues, which consisted of short answer completion items covering each of the nine points in the critical sentences.

TE 002 941

Design and Subjects.--Reading time (S-paced; 16 sec.; 10 sec.) was combined factorially with presence and absence of an immediate prompted recall test. The Ss were 72 undergraduates from University of Maryland, randomly assigned with 12 Ss in each of the six groups.

Procedure.--The Ss were run individually for two sessions: 1) Acquisition and, seven days later, 2) Retention. Each S had three acquisition trials and, after each trial, a free recall test. All Ss had four long-term retention tests: 1) free recall; 2) prompted recall on text material; 3) general cues test on critical sentences; and 4) explicit cues test on critical sentences. Half of the Ss also had an immediate prompted recall test on text material after the third trial of acquisition. During acquisition Ss in the S-paced group controlled the amount of study time for each slide, but they were not permitted to review previous slides. For the 10-sec. and 16-sec. groups each slide was presented for 10 sec. or 16 sec., respectively. Table 1 shows the sequence of events and measures recorded.

Table 1. Sequence of Tests and Measures Analyzed

	Acquisition (Immediate)				Retention (Delayed)			
	Free Recall			Prompted	Free	Prompted	General	Specific
	T-1	T-2	T-3	Recall	Recall	Recall	Cues	Cues
Facts from Text	(X	X	X)	X	X	X		
Critical Sentences	(X	X	X)		X		X	X

Analyses.--The within Ss factors differed for each analysis. There were four analyses of number of facts recalled from the text: 1) Free Recall, Acquisition; 2) Free Recall, Retention; 3) Prompted Recall, Immediate; 4) Prompted Recall, Delayed. For each analysis, two within Ss factors were Processing Mode (Factual, Inclusion, Temporal) and Location of material (Preceding or Following critical sentences). An additional factor for Free Recall, Acquisition, was Trials and for Free Recall, Retention, was Time of Test (Trial 3, Acquisition; Delayed test).

There were three analyses of critical sentences: 1)Free Recall, Acquisition; 2) Free Recall, Retention; and 3) Prompted Recall, Delayed. For each analysis one within Ss factor was Processing Mode. An additional factor for Free Recall, Acquisition was Trials; for Free Recall, Retention, was Time of Test; and for Prompted Recall, Delayed, was Type of Test (general cues; specific cues).

Results

On all measures there was a significant effect of reading time, with S-paced best and 10-sec. worst. Free recall of the text and critical sentences increased significantly over trials in Acquisition, and there was a significant loss over the seven-day retention interval.

The mode of processing required by the critical sentences had no significant effect upon recall of text material preceding or following it on any measure. Also, there was no reliable effect of the immediate prompted recall test upon any long-term retention measure.

The critical sentences did differ significantly in difficulty on all measures. Inclusion relations were best and temporal were worst. Also, the mode of processing interacted significantly with reading time on both free recall and prompted recall; with trials on Acquisition; and with time of test on Free Recall, Retention. For the S-paced group free recall of the three kinds of critical sentences did not differ by trial three. For the 16- and 10-sec. groups free recall of inclusion and factual sentences did not differ by trial three but recall of temporal sentences decreased sharply as reading time decreased. For all three reading times retention of inclusion sentences showed essentially no loss over seven days while the rate of loss of factual was approximately equal to that of temporal.

Prompted recall of critical sentences was better with specific cues than with general cues. Also, the form of the prompted recall test interacted

with mode of processing. The superiority of specific cues was greatest for factual sentences and did not occur for temporal sentences.

Conclusions

Complex relational sentences did not inhibit recall of material following or preceding it in the text on either acquisition or long-term recall. Since the complex material differed in difficulty across trials and reading time, it seems unlikely that material requiring complex processing interferes with recall of surrounding material. The increased difference in recall of the critical sentences with reduced reading time suggests that when difficult material is encountered with restrictions upon time that the difficult material is ignored rather than interfering with recall of material surrounding it.

The differential loss in long-term retention of the of the critical sentences suggests the need to explore further the effect of relationships within and among sentences in text upon organization and retention of the material.

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[1]Presented at AERA, Chicago, April 4, 1972.

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